



# UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,592	03/17/2004	Je-Min Park	9898-335	7354
20575	7590	03/13/2006	EXAMINER	
MARGER JOHNSON & MCCOLLOM, P.C. 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			MENZ, DOUGLAS M	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/803,592

Applicant(s)

PARK ET AL.

Examiner

Douglas M. Menz

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/27/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Species IA, claims 1-4, in the reply filed on 1/26/06 is acknowledged. The traversal is on the ground(s) that claim 1 is generic to all of the species of Group I. Upon further review, the Examiner agrees with the Applicant that claim 1 is generic to all of the species of Group I. However, the requirement is still deemed proper and is therefore made FINAL, with claim 1 being generic.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-4 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's Admitted Prior Art (APA).

Regarding claim 1, APA discloses a semiconductor memory device with a capacitor on a bit line (COB) cell structure, comprising:

a semiconductor substrate (100, Prior Art Fig. 2B) including an isolation region (104, Prior Art Fig. 2B) that defines an active area with a plurality of source/drain regions (102, Prior Art Fig. 2B);

a contact pad layer formed on the semiconductor substrate, said contact pad layer including gate line structures (112, Prior Art Figs. 3A-B), first contact pads (114, Prior Art Figs. 3A-B) connected to parts of the source/drain regions, second contact pads (116, Prior Art Figs. 3A-B) connected to the other source/drain regions (Prior Art Fig. 3B), and a first interlevel dielectric layer (122, Prior Art Fig. 4B) covering the gate line structures and the first and second contact pads (Prior Art Fig. 4B);

a bit line contact plug layer on the contact pad layer, said bit line contact plug layer including lower storage node contact plugs (136a, Prior Art Fig. 4B) connected to the first contact pads (114, Prior Art Fig. 4B), bit line contact plugs (126, Prior Art Fig. 4D) connected to the second contact pads (116, Prior Art Fig. 4D), a protective layer pattern (122, Prior Art Fig. 4D) that covers the second contact pads (116, Prior Art Fig. 4D) to prevent the second contact pads from being connected to the lower storage node contact plugs and/or upper storage node contact plugs, and a second interlevel dielectric layer (134, Prior Art Figs. 4B-D) covering the lower storage node contact plugs and the protective layer pattern; and

a bit line layer formed on the bit line contact plug layer, said bit line layer including the upper storage node contact plugs (136b, Prior Art Figs. 4B-C) connected to the lower storage node contact plugs (136a, Prior Art Figs. 4B-C), bit line structures (132) connected to the bit line contact plugs, and a third interlevel dielectric layer (134, Prior Art Fig. 4C) covering the upper storage node contact plugs and the bit line structures (Specification pages 1-4).

Art Unit: 2891

Regarding claim 4, APA further discloses a capacitor (142, Prior Art Figs. 5B-C) formed on the bit line layer and connected to the upper storage node contact plugs (Prior Art Figs. 5B-C).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (APA).

Regarding claims 2-3, APA discloses the structure of claim 1 as mentioned above. However, APA does not explicitly disclose wherein the second interlevel

Art Unit: 2891

dielectric layer is formed of a silicon oxide and the protective layer pattern is formed of silicon nitride. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use silicon oxide and silicon nitride as these two dielectrics are the most widely used dielectrics in the semiconductor industry.

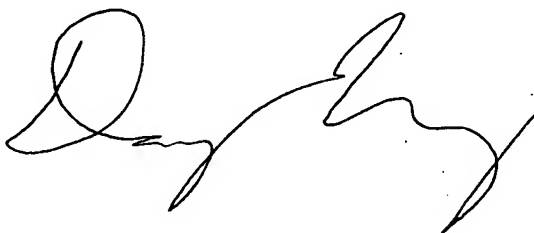
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas M. Menz whose telephone number is 571-272-1877. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DM



3/5/06